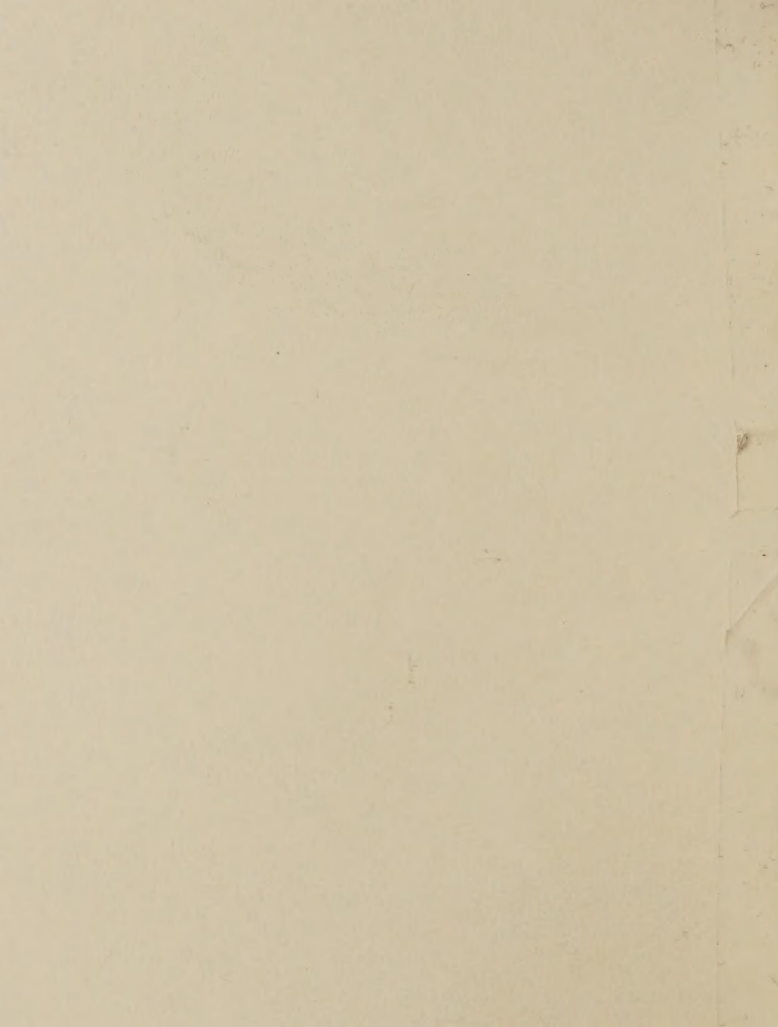


Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



Reserve
aSB608
.D6C45

ESTIMATING DECAY in WEST-SIDE DOUGLAS-FIR

by T. W. CHILDS

December 1959



PACIFIC NORTHWEST
FOREST AND RANGE EXPERIMENT STATION
U. S. DEPT. OF AGRICULTURE • FOREST SERVICE

AD-33 Bookplate
(1-63)

NATIONAL

**A
G
R
I
C
U
L
T
U
R
A
L**



LIBRARY

ESTIMATING DECAY
IN WEST-SIDE DOUGLAS-FIR AGRICULTURE

NATIONAL AGRICULTURAL LIBRARY

by T. W. Childs

ADD 22 1985

Determination of net volumes in standing timber is a difficult and specialized job. Good estimates of decay can be made in old-growth Douglas-fir stands--and even in individual trees under favorable conditions--but prerequisites for good work are (1) a trained eye for detection of inconspicuous indicators, (2) information on the extent of decay associated with various indicators, and (3) familiarity with local differences from regional averages. This leaflet provides a very brief coverage of the second of these needs.

WHITE POCKET ROT caused by Fomes pini, commonly known as conk rot, makes up about four-fifths of the total decay in old-growth stands. Conks are corky, hoof to bracket shaped, concentrically furrowed and dark brown to almost black above, and lighter brown below. They are almost always present on trees with appreciable decay, but on the upper trunks of tall trees they may be too inconspicuous to be seen without field glasses. Occasionally, in old stands, the large conks fall from the lower trunks and the small conks become

covered with moss, so that cull is likely to be seriously underestimated.

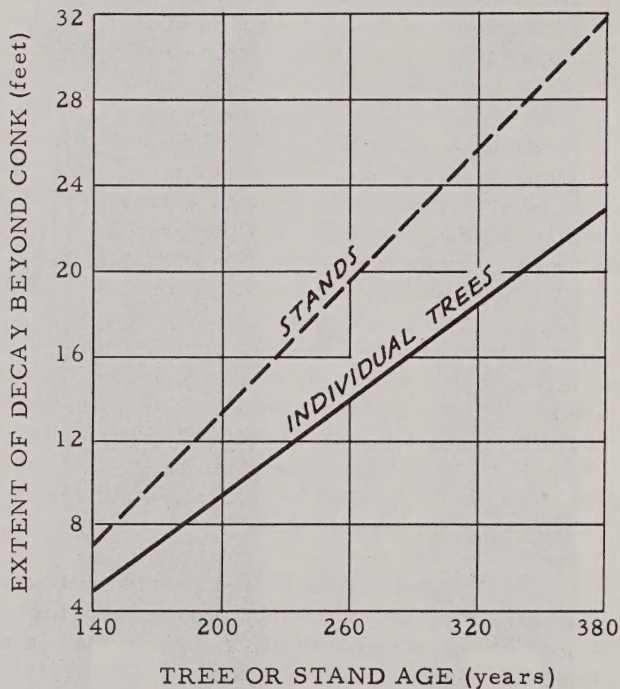
Swollen knots are less common than conks and are harder to see, but are equally dependable as indicators of decay. Except at close range they can be seen only in profile, where they appear as slight protuberances, usually gently rounded and projecting at an angle less than 30° from the main line of the trunk. They must not be confused with burls, which project more abruptly and which do not indicate decay.

For estimates of cull in individual trees and logs, average extent of decay above the highest and below the lowest conk can be read from the solid line in the accompanying graph. For example, if the lowest and highest indicators of decay on a 250-year-old tree are conks at 20 and 60 feet, decay is estimated to extend from 7 to 73 feet. This estimate includes only the intermediate ("white pocket") and advanced ("honeycomb") rot, much of which is discarded during logging and milling. Incipient rot, known as firm red stain, usually extends 3 or 4 feet beyond the typical decay but is ordinarily classed as degrade rather than cull.

819694



A, Burl, and B, swollen knots (blind conks), on Douglas-fir



Extent of conk rot above the highest or below the lowest conk.

Decay extends only half as far beyond swollen knots as beyond conks. If, on the tree just described, a swollen knot is seen at 70 feet, the upper limit of decay should be estimated at 77 feet.

When cull percentages are to be obtained for the Douglas-fir component of entire stands, rather than for individual trees, decay extent should be read from the broken line on the graph. Defectiveness of trees may be underestimated or entirely overlooked for various reasons, such as falling of conks from trees with very old infections or failure of the cruiser to see small conks. Experience has shown that the decay extents indicated by the broken line, though too great for single trees that can be thoroughly scrutinized, will usually yield close approximations of actual cull volumes when applied to large numbers of trees in ordinary cruises.

The following miscellaneous observations may be helpful: (1) Conk rot is generally more severe in southern parts of the region than in northern, on southerly aspects than on northerly; in old stands than in young; in pure stands than in mixed; on good sites than on poor; on steep slopes than on gentle; on upper slopes than on lower; on shallow soils than on deep; and where vine maple,

vanillaleaf, oxalis, or rose predominate in the secondary vegetation than where salal, twin-flower, or rhododendron predominate. (2) The older the stand, the higher the conks. (3) Small conks usually indicate less extensive decay than do conks of average size or larger. (4) Conk rot is common and causes moderate degrade in some young-growth stands, but in trees less than about 125 years old the white pockets are usually so sparse that cull is negligible.

RED-BROWN BUTT ROT, caused by Polyporus schweinitzii, usually infects old-growth trees through fire scars and younger trees through the roots. Sporophores occur as thin brackets on butts, or as thick-stalked, irregular saucers on nearby ground. They are moist and cheesy when fresh, with dirty-green undersurfaces, reddish-brown upper surfaces, and light-yellow margins. After a few weeks they die and become corky and dark. Fresh sporophores are present on only a small minority of infected trees at any one time, but remnants of old ones can often be found. Trees with sporophores or fire scars should be culled to a height of 8 feet above the stump or 2 feet above the top of the scar, whichever is the greater. Most butt scars in young-growth stands are caused by bears, not fire, and are seldom associated with more than 10 or 20 board feet of cull.

BROWN TRUNK ROT, caused by Fomes officinalis (F. laricis), occurs principally in old stands. It is much less common than trunk rot but more destructive to individual trees. Sporophores are cheesy to chalky, hoof shaped to long and narrow, white to light brown, and usually large and conspicuous. The brown cubical decay, with white mycelium in the crevices, can sometimes be seen where large branches have broken off. Presence of a sporophore or rotten branch base indicates that at least half of the volume is defective, and the entire tree should be culled to allow for decay in other trees where no indicators are visible.

YELLOW-BROWN TOP ROT, caused by Fomes subroseus, may occur anywhere along the trunk but is most common and extensive in upper logs. Sporophores are too inconspicuous to be of much help in estimation of decay. Broken tops, which often serve as infection courts for top rot and brown trunk rot, are fairly good indicators of the presence of one or the other of these decays, but extent of cull varies so greatly that estimates must be based on local experience. Incipient decay caused by any of the brown rots makes the wood worthless at an early stage of infection, and should be included in cull estimates.

Most of the information in this leaflet was compiled from the following publications, with which every cruiser in the Douglas-fir region should be familiar:

Boyce, J. S.

1923. A study of decay in Douglas fir in the Pacific Northwest. U.S. Dept. Agr. Bul. 1163, 20 pp., illus.

1932. Decay and other losses in Douglas fir in western Oregon and Washington. U.S. Dept. Agr. Tech. Bul. 286, 60 pp., illus.

and Wagg, J. W. Bruce

1953. Conk rot of old-growth Douglas-fir in western Oregon. Oreg. Forest Prod. Lab. Bul. 4, 96 pp., illus.



R0000 566852



R0000 566852